

Table S1. Cyanobacterial genomes containing genes encoding aaRSs^C

Gene ID	Gene Product Name	Genome
2506598597	arginyl-tRNA synthetase (EC 6.1.1.19)	<i>Spirulina subsalsa</i> PCC 9445
2506610414	arginyl-tRNA synthetase (EC 6.1.1.19)	<i>Spirulina major</i> PCC 6313
2504684340	cysteinyl-tRNA synthetase (EC 6.1.1.16)	<i>Crinalium epipsammum</i> PCC 9333
638105535	glutamate--tRNA(Gln) ligase (EC 6.1.1.24)/glutamyl-tRNA synthetase (EC 6.1.1.17)	<i>Trichodesmium erythraeum</i> IMS101
2504092697	glutamyl-tRNA synthetase	<i>Oscillatoria nigro-viridis</i> PCC 7112
2505170766	glutamyl-tRNA synthetase, bacterial family	<i>Microcoleus vaginatus</i> PCC 9802
2509421051	glutamyl-tRNA synthetase, bacterial family	<i>Oscillatoria acuminata</i> PCC 6304
2509512529	glutamyl-tRNA synthetase, bacterial family	<i>Oscillatoria</i> sp. PCC 10802
638108551	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Trichodesmium erythraeum</i> IMS101
647564989	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Microcoleus chthonoplastes</i> PCC 7420
648859603	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Oscillatoria</i> sp. PCC 6506
2504092271	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Oscillatoria nigro-viridis</i> PCC 7112
2505171129	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Microcoleus vaginatus</i> PCC 9802
2506346988	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Microcoleus vaginatus</i> FGP-2
2508877648	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Oscillatoria formosa</i> PCC 6407
2509423134	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Oscillatoria acuminata</i> PCC 6304
2510101723	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Geitlerinema</i> sp. PCC 7105
2510440960	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Chamaesiphon minutus</i> PCC 6605
2609130917	Isoleucyl-tRNA synthetase (EC 6.1.1.5)	<i>Phormidium</i> sp. OSCR
640020071	leucyl-tRNA synthetase (EC 6.1.1.4)	<i>Lyngbya</i> sp. CCY 8106
2504685698	leucyl-tRNA synthetase (EC 6.1.1.4)	<i>Crinalium epipsammum</i> PCC 9333
2509509165	methionyl-tRNA synthetase (EC 6.1.1.10)	<i>Oscillatoria</i> sp. PCC 10802
2509746733	Valyl-tRNA synthetase	<i>Leptolyngbya</i> sp. 2LT21S03 (Solid & 454 Clean assembly draft 1)
637231684	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Nostoc</i> sp. PCC 7120
641251708	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Acaryochloris marina</i> MBIC11017
642603643	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Nostoc punctiforme</i> PCC 73102
643584081	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Cyanothece</i> sp. PCC 7425
646568479	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Anabaena variabilis</i> ATCC 29413
647105916	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Cylindrospermopsis raciborskii</i> CS-505
647108991	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Raphidiopsis brookii</i> D9
647580186	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Synechococcus</i> sp. PCC 7335
648051548	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Nostoc azollae</i> 0708
2022830072	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Leptolyngbya</i> sp. JSC-1
2501541529	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Tolypothrix</i> sp. PCC 7601
2503245767	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix agardhii</i> NIVA-CYA 126/8
2503368123	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Cyanobacterium stanieri</i> PCC 7202
2503637215	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Halothece</i> sp. PCC 7418
2503741712	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Nostoc</i> sp. PCC 7107
2503745801	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Cyanobacterium aponinum</i> PCC 10605
2504093999	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Calothrix</i> sp. PCC 6303
2504130158	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Anabaena cylindrica</i> PCC 7122

2505768505	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Fischerella</i> sp. JSC-11
2505799244	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Calothrix</i> sp. PCC 7507
2506077272	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix</i> NIVA-CYA406
2506383335	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix</i> sp. NIVA CYA 15
2506395049	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix</i> sp. 585
2506414756	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix agardhii</i> NIVA-CYA 34
2506420479	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix prolifica</i> NIVA-CYA 98
2506480986	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Lyngbya majuscula</i> 3L
2506492816	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Anabaena</i> sp. PCC 7108
2506598839	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Spirulina subsalsa</i> PCC 9445
2506610257	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Spirulina major</i> PCC 6313
2507337115	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Scytonema hofmanni</i> UTEX 2349
2507412169	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix</i> sp. st147
2507480205	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Calothrix</i> sp. PCC 7103
2509431957	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Microcoleus</i> sp. PCC 7113
2509553970	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Dactylococcopsis salina</i> PCC 8305
2509768206	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Cylindrospermum stagnale</i> PCC 7417
2509774928	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Nodosilnea nodulosa</i> PCC 7104
2509782933	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Microchaete</i> sp. PCC 7126
2509802406	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Leptolyngbya boryana</i> PCC 6306
2509812648	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Nostoc</i> sp. PCC 7524
2509841850	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Leptolyngbya</i> sp. PCC 7375
2509875443	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Geminocystis herdmanii</i> PCC 6308
2510027282	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Calothrix desertica</i> PCC 7102
2510088921	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Rivularia</i> sp. PCC 7116
2512635464	valyl-tRNA synthetase (EC 6.1.1.9)	<i>cyanobacterium</i> PCC 7702
2512980725	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Fischerella</i> sp. PCC 9431
2512987564	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix prolific</i> NIVA-CYA 540 (Draft1)
2514738238	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Acaryochloris</i> sp CCMEE 5410
2516148082	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Fischerella</i> sp. PCC 9605
2516860686	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Anabaena circinalis</i> AWQC131C
2516864791	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Anabaena circinalis</i> AWQC310F
2517064125	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Fischerella</i> sp. PCC 9339
2517241608	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Mastigocladopsis repens</i> PCC 10914
2517649263	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Filamentous cyanobacterium</i> ESFC-1
2517690921	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Leptolyngbya</i> sp. PCC 6406
2522376071	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Cylindrospermopsis raciborskii</i> CS-509
2523878684	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix agardhii</i> NIVA-CYA 56/3
2529412579	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Westiella intricata</i> UH HT-29-1
2529416758	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Hapalosiphon welwitschii</i> UH strain IC-52-3
2550702003	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Fischerella muscicola</i> SAG 1427-1
2550708624	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Fischerella muscicola</i> PCC 7414
2550715971	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Fischerella thermalis</i> PCC 7521
2550831074	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Chlorogloeopsis fritschii</i> PCC 9212

2551962007	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Scytonema hofmanni</i> PCC 7110
2551968109	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Chlorogloeopsis fritschii</i> PCC 6912
2562230881	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Anabaena</i> sp. 90
2563159503	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Nodularia spumigena</i> CCY9414
2579004233	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Leptolyngbya</i> sp. Heron Island J
2580947769	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Richelia intracellularis</i> HH01
2586758929	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Aphanizomenon flos-aquae</i> NIES-81
2588031065	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Calothrix</i> sp. 336/3
2600482339	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix mougeotii</i> NIVA-CYA 405
2602458587	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix prolifica</i> NIVA-CYA 406
2602464450	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix agardhii</i> NIVA-CYA 15
2602532472	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Planktothrix rubescens</i> NIVA-CYA 407
2609110326	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Phormidesmis priestleyi</i> ANA
2619252232	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Tolypothrix bouteillei</i> licb1
2619438059	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Leptolyngbya</i> sp. KI0ST-1
2622770592	valyl-tRNA synthetase (EC 6.1.1.9)	<i>Richelia intracellularis</i> RC01